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TITLE: Speech enabled internet browsing method involves providing websites to user depending on user profile, during activation of hyperlink by user

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Basic Abstract Text - ABTX (3):

USE - For speech-enabled browsing on internet regarding photography, gardening, cars, restaurants, CDs, bike paths, theaters, stores, for use in companies, business and organizations and in hospital.

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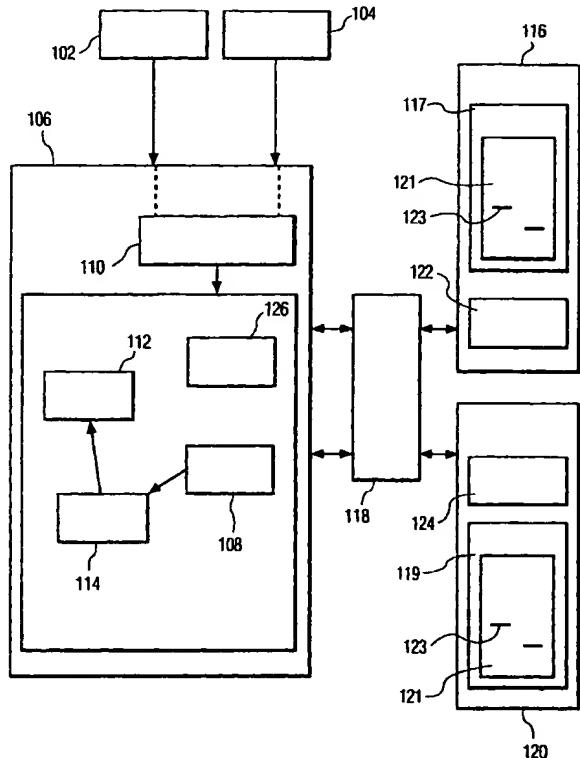
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[Continued on next page]

(54) Title: USER-PROFILE DRIVEN MAPPING OF SPEECH ONTO URLs



(57) Abstract: An Internet service provider enables first and second parties to purchase or lease a specific speech input to a speech-enabled browser for user access of a first Web site having a first Web address and a second Web site having a second Web address, respectively, through control of a speech-enabled hyperlink on a portal. User access is provided to the first Web site or to the second Web site dependent on a geographic location of the user's client upon the user activating the hyperlink through speech input.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

User-profile driven mapping of speech onto URLs

The invention relates to browsing on the Internet, especially through speech input.

5 The Internet is a vast source of information presented in Web documents. Reportedly, one-and a half million web pages get currently added every day. Web documents typically contain hyperlinks that allow hopping from one Web document to other Web documents indicated by the network address in the hyperlinks. As a result, any document is connected to any other document through an appropriate route of hyperlinks, hence the name 10 "Web". The importance of allowing user-friendly interaction with the Internet for selectively locating specific Web documents based on their information content cannot be overemphasized.

15 User-interaction is facilitated by, for example, reliable and accurate search engines such as PlanetSearch of Philips Electronics that lets the user query an indexed inventory. The user-interface of PlanetSearch provides each specific one of the query results with indications of the relative weight of each of the multiple query terms that has contributed to the ranking of the specific result. See U.S. serial no. 08/922,825 filed 09/03/97 (attorney docket PHA 21,935A) and U.S. serial no. 08/371,188 filed 03/20/98 (attorney docket PHA 21,935B), both incorporated herein by reference. Also of interest is U.S. serial 20 no. 09/104,491 (attorney docket PHA 23,422) filed 6/25/98 and herein incorporated by reference, that discloses information retrieval based on the semantic context and the user-profile.

25 Another contribution to facilitate Web browsing is based on speech recognition. U.S. serial no. 09/174,167 (attorney docket PHN 16,571) of Philips Electronics, filed 10/16/98 and herein incorporated by reference, describes a client-server architecture for applying speech recognition to interaction on the Internet. A browser plug-in records the user's voice and pre-processes it in order to produce feature vectors. The feature vectors are sent to a speech recognition server over the Internet.

In more detail, U.S. serial no. 09/174,167 discusses a method and system for recognizing an input pattern stored in a user station and using a recognition unit of a server station. The server station and the user station are connected via a network. The recognition unit is operative to recognize the input pattern using a model collection of at least one

5 recognition model. An initial recognition enrollment step is performed for transferring, from the user station to the recognition unit, model improvement data associated with a user of the user station and for associating the user of the user station with a user identifier. For a

10 recognition session between the user station and the server station, the user station sends to the server station a user identifier associated with a user of the user station. Also, an input pattern is transferred to the server station that is representative of time sequential input generated by the user. The recognition unit is used to recognize the input pattern by incorporating at least one recognition model in the model collection which reflects the model improvement data associated with the user. The server comprises a plurality of different

15 recognition models of a same type. In the recognition enrollment step, a recognition model is selected from the plurality of different recognition models of a same type and in dependence on the model improvement data associated with the user. Also in the enrollment step an indication of the selected recognition model is stored in association with the user identifier.

20 Further, in the step of recognizing the input pattern a recognition model is retrieved associated with the user identifier transferred to the server station and the retrieved recognition model is incorporated in the model collection.

By means of storing a number of recognition models of a same type, e.g. a number of language models each targeted towards at least one different subject, such as photography, gardening, cars, etc., a suitable recognition model can be selected for a specific user of the system. This allows good quality recognition. In this way, a user is not bound to

25 one specific type of recognition model, such as a specific language model or vocabulary, whereas at the same time the flexibility of the system is achieved by re-using models for many users. For instance, all users which have expressed an interest in photography can use the same language model which covers photography. As such this flexibility and the associated good recognition result provided by using a user-oriented recognition model is

30 achieved without storing a specific model for each user. Advantageously, also the amount of training data which needs to be supplied by the user can be substantially smaller than in the known system. Instead of requiring a sufficient amount of data to fully train a model or to adapt an already existing model, according to the invention the amount of data needs only to be sufficient to select a suitable model from the available models

Now, with the speech technology mentioned above, speech-activated hyperlinks can be implemented to enable speech-based Web browsing. Speech-input from the user is processed so that it eventually functions as an equivalent to mouse-clicking a hyperlink. The speech-input is supplied to a recognizer. The recognizer provides a

5 recognition result and supplies the result to a data base of stored words. The data base has hyperlinks associated with the words stored. For example, a specific word is associated with a specific hyperlink, or a set of synonyms, semantically similar words or similar expressions are all associated with a specific hyperlink. If there is a match, the associated hyperlink gets activated and the user is taken to a new Web site whose URL is identified in this hyperlink.

10 For example, upon registering with a service provider a person is enabled to freely associate URLs with certain words or expressions (e.g. "myPictures", "myFamily", ...) at the person's home page. The service provider furnishes a piece of HTML code that the person puts on his/her Web (home) pages. Whenever this page is being downloaded by another user, the code causes a speech button to be displayed in the browser. The user can

15 press the button and enter a word or a sequence of words through speech. If the recognizer returns a word for which the button owner has specified a URL, the user is taken to the corresponding new Web page. The home page can also be dynamically created if the URL addresses a (cgi-)script. Furthermore the vocabulary of the recognizer comprises words that the service provider himself can associate with links. If such (generic) words like "books" are

20 entered as speech input the system will take the user to, e.g., a category page with links to related topics as well as (targeted) advertisement banners. Alternatively, words or expressions can be sold to a customer. For example, when a user enters the word "books" through speech, he or she is taken to the Web site of a company which sells books via the Internet.

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It is, among other things, an object of the invention to provide a user-friendly way of browsing the Web. It is another object, among other things, to use an additional degree of freedom for enabling to hyperlink Web sites, e.g., to increase user-friendliness of

30 interaction with the Internet.

The invention relates to a method of enabling a user to navigate on the Internet. User-interaction with a hyperlink is enabled through a browser at a user's client. A

first Web site or a second Web site is provided to the user depending on a profile of the user upon the user activating the hyperlink. The first and second Web sites have different URL's or Web addresses. The user profile depends, for example, on an IP address of the user, or on a hardware- and/or software profile of the user's client. The IP address typically includes an 5 indication of a geographic location of the user's client. This location can then be used to selectively link to the first or the second Web site.

If the browser is speech controllable or speech-enabled, the hyperlink is speech-activatable through a specific speech input to the browser. With regard to mouse-clicking, speech input adds a further dimension or degree of freedom to the selection of a 10 Web address for being associated with a hyperlink. A mapping of the speech input onto a web address for the same hyperlink representation on the user's display monitor may depend on the language used recognized as such, as well as on the user's geographic location.

The invention also provides an Internet service. The service enables a first party to reserve a specific speech input to a speech-enabled browser for user access of a first 15 Web site having a first Web address through control of a speech-enabled hyperlink on a portal. The service also enables a second party to reserve the same specific speech input to the browser for user-access of a second Web site having a second Web address through control of the hyperlink on the portal. User access is provided to the first Web site or to the second Web site dependent on a profile of the user upon the user activating the hyperlink 20 through speech input. The profile may depend on an IP address of the user from which a geographic region of a client of the user can be derived.

The invention further provides a new business model for an Internet service based on leasing, licensing or selling associations between a web address and user profiles. The service enables providing user access to a portal that has a hyperlink. A first Web 25 address of a first party is assigned to the hyperlink. Also a second Web address of a second party is assigned to the same hyperlink. User access to the first Web address or the second Web address is now dependent on a profile of the user upon the user activating the hyperlink. Again, the profile depends, for example, on a geographic region of a client of the user.

The inventors now propose to take into account the profile of the user, e.g., the 30 geographic region of the user's client device. This geographic region of the user can be derived from his/her IP address. The data base mentioned above now has an entry for a geographic location or region, in addition to the stored words, the hyperlinks and associations there between. The specific hyperlink that gets activated is now a function of one or more query words and of the geographic location of the user's client. This keyword-location

combination now enables, for example, activating a specific hyperlink that is associated with the geographical area. Upon entering, e.g., "restaurants" "CDs" or "bike paths" via the keyboard or using speech, the user gets in return a Web site that lists the local restaurants, music stores or the bike path routes, respectively, local to his or her geographical area.

5 The invention supports a new business model for selling or leasing hyperlinks, especially speech-activated hyperlinks, to companies or organizations per geographic area. Instead of a user always retrieving the same Web site through the, e.g., speech-activated, hyperlink regardless of his/her location on or over the planet, the user now is enabled to retrieve a hyperlink that is relevant to his/her location. This geographic selectivity is an
10 interesting asset to the Internet service provider and to the businesses and organizations with only local interests, such as theaters, restaurants, stores. Linguistic differences or dialects can be taken into consideration to determine the user's geographic location.

Accordingly, if users type in or speak the word "Flower Shops" they might be looking for a shop in their vicinity. The invention allows for tailoring the response of the
15 recognition system to the location and stored preferences of every user. As mentioned above, the location of a user can easily be retrieved from his/her IP address. A directive for a keyword-location combination is stored in a database. The localization can be represented by, e.g., a Zip code. A category page for the user can be built dynamically, containing not only links to global enterprises, e.g., mail order shops or online service providers who operate
20 nationwide or worldwide, but also to local shops. Also targeted advertisement banners can be placed. Alternatively, if the word is sold to companies, different companies can be associated with different locations. For example, a company can purchase or lease a word for a set of Zip codes. Even a mixed approach is possible. For some users the word may result in a (localized) category page, others can be taken to the site of the appropriate company.

25 The user's preferences can be used to decide which action to take when a certain word is recognized. For this, it is necessary that the user's plugin has a unique identifier. Also, a cookie can be used or, if speaker verification is accurate enough this verification can be used as another alternative. Either the user can register his/her preferences with the service provider or a user profile can be built by tracking his/her most popular words
30 and Web surfing behavior. Preferences and profile information may comprise gender, age and hobbies, nationality, etc.. Also see, e.g., U.S. serial no. 09/104,491 (attorney docket PHA 23,422) mentioned above. Similar to the location information this information can be used to decide on which new page the user will be taken upon recognition of a certain word.

Above, the IP address is mentioned as an example of user-profile information that can be used to dynamically tailor the selection of hyperlinks. Additionally, or supplementarily, to the IP address information concerning the setup of the user's client (e.g., browser type and version, operating system, connection type) can be used as well for the

5 dynamic tailoring. The server-client interaction enables the server to extract this kind of setup information. Alternatively, the set-up information is stored at the server, e.g., obtained through the user registering with the service provider. Within this context, see, e.g., U.S. Serial no.08/785,459 (attorney docket number PHA 23,217) filed 1/17/97 for Mehran Moshfeghi, Jun Wang, Stephen Wong and Yuan-Pin Yu, for A METHOD FOR
10 PERSONALIZING HOSPITAL INTRANET WEB SITES, herein incorporated by reference. This document relates to The server includes a layer for dynamically generating web pages and other data objects using scripts, such as graphic, audio and video files, in dependence on stored information indicating the user's needs and preferences, including those presumed from stored information as to the user's function, job, or purpose for being at the hospital, and
15 logged usage profiles, the level of the user's access privileges to confidential patient information, and the computer and physical environments of the user. Notably, the content is generated in dependence on the display resolution and lowest bandwidth link between the server and browser to limit the waiting time for downloads as well as the server load. Now, if the user enters the word "Software", either as typed text or speech input, and the server
20 system has determined that the client is, e.g., a MacIntosh, a selection of software-related sites is retrieved that relates to the MacIntosh client. If the server has determined that the client is an IBM-compatible PC, another selection of software related documents is retrieved.

25 The invention is explained by way of example and with reference to the accompanying drawings, wherein Fig.1 is a block diagram illustrating a business model in the invention.

30 The invention enables a party to guide a user to a specific Web site on the Internet. A portal is provided with multiple speech-controllable hyperlinks. Interaction with the hyperlinks is possible through a speech-enabled browser. In a commercial transaction a right is assigned to the party to have at least temporarily at least one specific natural language expression activating a specific one of the speech-controlled hyperlinks to the specific Web

site. A Web address of the specific Web site that is retrieved through the hyperlink is dependent on the Internet Protocol (IP) address of the user's client. The geographic location of the user's client can be extracted from the user's IP address. An IP address typically consists of four numbers A.B.C.D. Typically, the last one (D) is the most specialized/local 5 one and the first is the most general one. Companies such as "DoubleClick" collecting IP addresses store the relation A; A.B.; A.B.C or even A.B.C.D in their databases. Some computers have fixed IP addresses, and those will not change. Some clients (mostly the private ones) connect to the Internet on demand. They dial up their service provider and are assigned an IP address. They typically dial up their closest service provider in order to only 10 make a local call. This access point assigns those clients an IP address dynamically. They will have the same prefix A.B or A.B.C, and the last numbers C.D or D, respectively, are dynamically assigned. By knowing where the access point with the prefix A.B or A.B.C is located assumptions can be made about where the client is located. Those prefixes are stable and can therefore be stored in databases. A client's geographic region location can be 15 determined dynamically and in real time. Accordingly, the expression could be sold, leased or licensed per geographic region to a commercial entity or an organization with invented interests in that region. For example, the expression can be used with speech-enabled hyperlinks on a portal or gateway, i.e., a Web site that provides a gateway to the rest of the Internet, to guide users to Web sites that are relevant to their geographic region.

20 Fig.1 is a block diagram illustrating the concept of the business model in the invention. A first party 102 has an interest in commercial activities local to a first geographic region and informs the public through its Web site. A second party 104 likewise has an interest in similar commercial activities but local to a second geographic area different from the first region. An Internet service provider 106 governs a portal, or gateway, that has a 25 variety of hyperlinks 108, typically of general interest to a wide audience. The portal is graphically represented on a visitor's client's display in a uniform manner, regardless of the geographic location of the client. Parties 102 and 104 are interested in attracting attention via this portal. Service provider 106 commercially exploits the screen real estate of his portal and does this through attention brokerage based on a regional basis. Both parties 102 and 104 30 register with a lease unit 110 that allows them to have the Web addresses 112 of their respective Web sites registered as associated with a specific one of hyperlinks 108 on the portal and associated with their respective geographic regions 114. Now, a first client 116 residing in the first geographical region accesses the portal via the Internet 118, and a second client 120 residing in the second region accesses the same portal through the Internet 118. On

their respective display monitors 117 and 119, the users see the same graphical representation 121 of the portal. Both the client devices activate the same graphical representation 123 of the hyperlink for which parties 102 and 104 have registered their lease. Based on the IP address of clients 116 and 120, it can be determined, as explained above, in which geographic 5 region they reside. Based on the region determined, service provider 106 gives client 116 automatically access to the Web site of party 102, and gives client 120 automatically access to the Web site of party 104 merely upon clicking the hyperlink.

Now, assume that clients 116 and 120 have speech-controllable browsers 122 and 124, respectively. Hyperlinks 108 of the portal are speech activatable through the 10 infrastructure of a speech recognition system, e.g., a system as disclosed in U.S. serial no. 09/174,167 (attorney docket PHN 16,571) mentioned above. Speech input of the same or of different words can now be used to access different Web sites dependent on the geographic region of the requesting client. Service provider 106 leases speech input and registers the words 126 assigned to parties 102 and 104 as associated with their Web addresses. Now, 15 service provider 106 can lease a variety of combinations to interested parties 102 and 104: (shared) portal real estate in the form of a hyperlink, different geographic regions, and different or the same words, thus improving the possibilities of attention brokerage via portal 121.

Reference is made to International Application published under PCT with 20 International Publication Number WO 99/12104 "Method and arrangement for finding information". This publication discloses a communications system for mobile stations that enables retrieving Web pages under control of the geographical location of the mobile user. This location formation is supplied by the mobile telephone system. The geographical 25 information is sent from the telephone system to the mobile station. The user of the mobile station establishes a connection with the Internet and sends out a request for documents. The request includes the location information. The content of the Web documents returned upon the request is associated with the geographical location of the mobile user as determined by the mobile telephone system. An implementation of this known method includes the step of the user performing a Domain Name System (DNS) query. A DNS is a service that translates 30 a domain name (e.g., www.philips.com) into an IP address. The user writes a predetermined text in a browser window. The text is sent to an Access Node that provides access to the Internet. The Access Node requests and then receives from the mobile telephone system the geographic location of the mobile user. The Access Node then combines the DNS query and the geographical information and maps the combination onto an IP address according to a

conversion table and sends the IP address thus retrieved back to the user. The user then can start the browser for a query based on the IP address received.

CLAIMS:

1. A method of enabling a user to navigate on the Internet, the method comprising:

- enabling user-interaction with a hyperlink (123) through a browser (122; 124) at a user's client (120; 116), wherein:
 - 5 - the browser is speech-controllable; and
 - the hyperlink is speech-activatable through a specific speech input to the browser; and
 - enabling providing a first Web site or a second Web site to the user depending on a profile of the user upon the user activating the hyperlink.

10 2. The method of claim 1, wherein the user profile depends on an IP address of the user.

3. The method of claim 1, wherein the user profile includes an indication of a geographic location of the user's client.

15 4. The method of claim 1, wherein the user profile depends on at least a hardware profile or a software profile of the user's client.

20 5. The method of claim 1, wherein the user profile depends on a history of user-interaction with the Internet via the speech-enabled browser.

6. A method of providing an Internet service, the method comprising:

- enabling a first party (102) to reserve a specific speech input to a speech-enabled browser for user access of a first Web site having a first Web address through control of a speech-enabled hyperlink on a portal (121);
- enabling a second party (104) to reserve the specific speech input to the browser for user-access of a second Web site having a second Web address through control of the hyperlink on the portal;

- providing the user access to the first Web site or to the second Web site dependent on a profile of the user upon the user activating the hyperlink through speech input.

7. A method of providing an Internet service, the method comprising:

5 - providing user access to a portal (121) that has a hyperlink (123) that is speech-activatable through speech input through a speech-controllable browser (122;124);

8. A user-profile controllable and speech-activatable hyperlink on a Web site as used in a method corresponding to one of the claims 1 to 7.

1/1

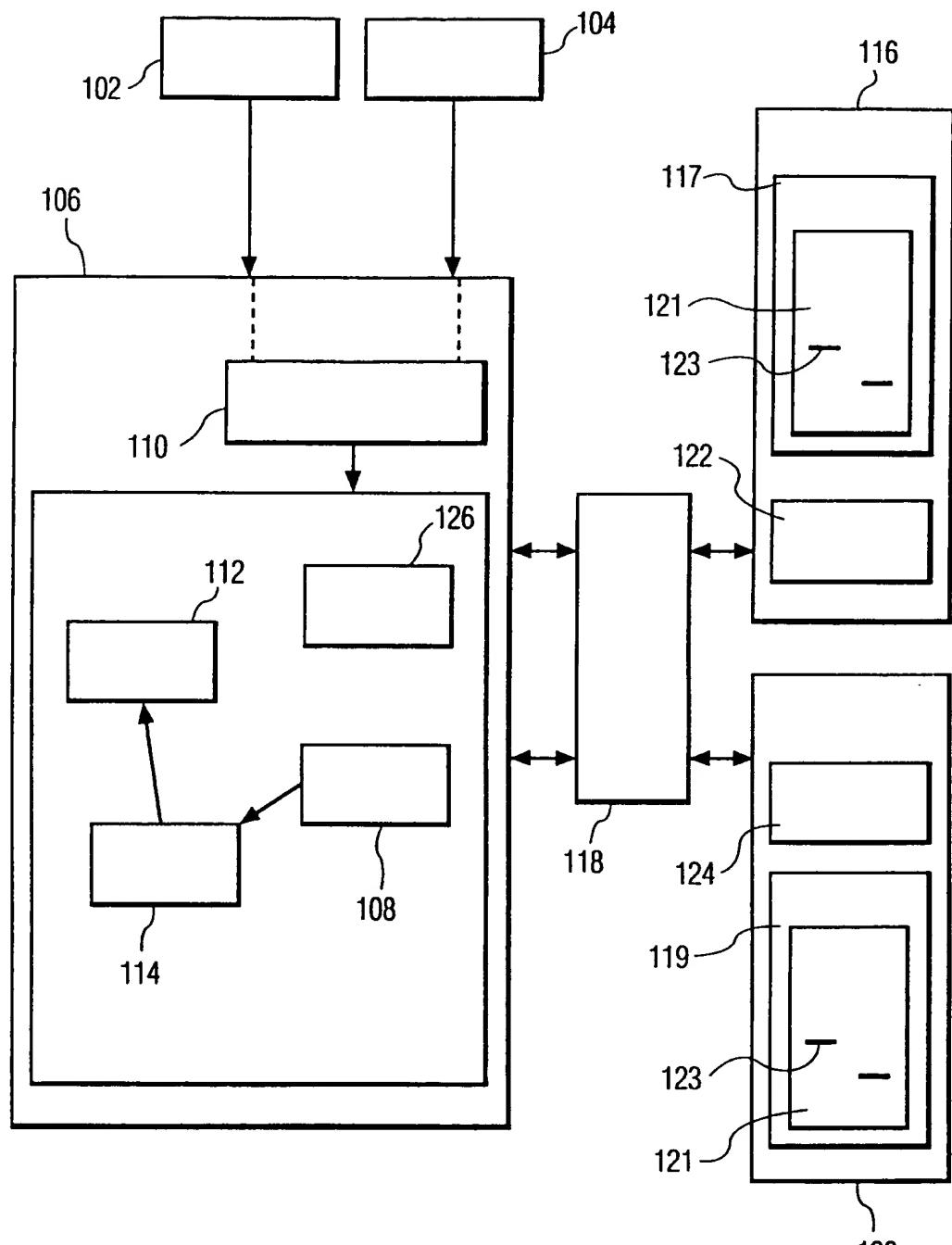


FIG. 1

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 00/05508

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F17/30 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F G10L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal, PAJ, INSPEC, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>KAZUHIRO KONDO ET AL: "A WWW BROWSER USING SPEECH RECOGNITION AND ITS EVALUATION" SYSTEMS & COMPUTERS IN JAPAN, US, SCRIPTA TECHNICA JOURNALS. NEW YORK, vol. 29, no. 10, 1 September 1998 (1998-09-01), pages 57-66, XP000786722 ISSN: 0882-1666</p> <p>page 57, right-hand column, line 18 - line 34</p> <p style="text-align: center;">-/-</p>	7,8
Y A		1-5 6

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

Date of the actual completion of the international search

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13 October 2000

23/10/2000

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Polzer, A

INTERNATIONAL SEARCH REPORT

Interr	ntal Application No
PCT/EP 00/05508	

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	abstract; figure 1 page 2, line 14 -page 3, line 6 ---	1,6
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A	abstract; figure 2 ---	1,6
Y	WO 98 12643 A (NAT SYSTEMS CORP) 26 March 1998 (1998-03-26)	1,3,5
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A	abstract page 4, line 9 -page 7, line 18; figure 1 ---	1,6,8
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A	MCKENZIE MATT: "WEB SERVICES GO SEARCHING FOR DOLLARS; WILL CONSUMERS ACCEPT PAY-TO-PLAY SEARCH ENGINES?" THE SEYBOLD REPORT ON INTERNET PUBLISHING, 'Online! vol. 2, no. 7, July 1998 (1998-07), page 22 XP002148261 Retrieved from the Internet: <URL: http://www.computer-select.com/> 'retrieved on 2000-10-13! the whole document -----	6,8

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International Application No
PCT/EP 00/05508

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